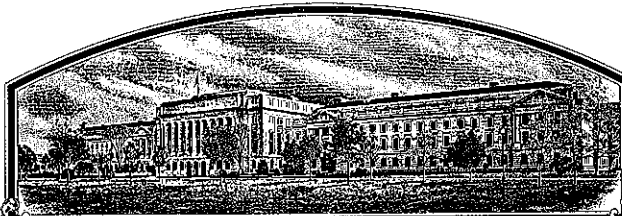


No.

9200254



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

**The Ohio State University,
Ohio Agricultural Research and Development Center**

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (P.L. 85-625, 70 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'GR915'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this *29th* day of *January* in the year of our Lord one thousand nine hundred and ninety-three.

Attest:

Kenneth Howard

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Mike Egan
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) The Ohio State University, Ohio Agricultural Research and Development Center		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. OH394	3. VARIETY NAME GR915
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) 1680 Madison Avenue Wooster, OH 44691		5. PHONE (include area code) 216-263-3886	FOR OFFICIAL USE ONLY PVPO NUMBER 9200254 Filing and Examination Fee: \$ 2150.00 Date August 25, 1992 Time 4:15 <input type="checkbox"/> A.M. <input checked="" type="checkbox"/> P.M. Filing and Examination Fee: \$ 250.00 Date August 24, 1992 Certificate Fee: \$ 250.00 Date January 11, 1993
6. GENUS AND SPECIES NAME Triticum aestivum L.	7. FAMILY NAME (Botanical) Graminae		
8. CROP KIND NAME (Common Name) Soft Red Winter Wheat	9. DATE OF DETERMINATION 6/28/90		
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Agricultural Experiment Station			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION		12. DATE OF INCORPORATION	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Dr. H. N. Lafever Agronomy Dept. Ohio Agricultural Research & Development Center 1680 Madison Avenue, Wooster, OH 44691 PHONE (include area code): 216-264-4155			
14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)			
a. <input checked="" type="checkbox"/> Exhibit A, Origin and Breeding History of the Variety. b. <input checked="" type="checkbox"/> Exhibit B, Novelty Statement. c. <input checked="" type="checkbox"/> Exhibit C, Objective Description of Variety. d. <input checked="" type="checkbox"/> Exhibit D, Additional Description of Variety. e. <input checked="" type="checkbox"/> Exhibit E, Statement of the Basis of Applicant's Ownership. f. <input checked="" type="checkbox"/> Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office <u>enclosed</u> g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."			
15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.) <input type="checkbox"/> YES (If "YES," answer items 16 and 17 below) <input checked="" type="checkbox"/> NO (If "NO," skip to item 18 below)			
16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input checked="" type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED	
18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S. <input type="checkbox"/> YES (If "YES," through <input type="checkbox"/> Plant Variety Protection Act <input type="checkbox"/> Patent Act. Give date: _____) <input checked="" type="checkbox"/> NO			
19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES (If "YES," give names of countries and dates) U.S. only - 1st date of sale, August 29, 1991 <input type="checkbox"/> NO			
20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable. The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF APPLICANT (Owner(s)) Howard N. Lofewer		CAPACITY OR TITLE Breeder	DATE 8/12/92
SIGNATURE OF APPLICANT (Owner(s)) J. D. L. L. L.		CAPACITY OR TITLE Associate Executive Director	DATE 8/19/92

Exhibit A

Origin and Breeding History of the Variety

1. GR915 (previously designated OH394) originated at The Ohio State University, Ohio Agricultural Research and Development Center from the cross: OH111/Toropi//Roland (OH111 = S410/Logan, S410 is a spring wheat from India, Toropi is an Al tolerant Brazilian spring). The final cross was made in 1979. GR915 was first selected as an F_3 plant in 1982. Fifty heads were reselected in F_7 in 1986 and progeny rows were examined for uniformity and yield through 1990. This line's earlier designation was 23179-4.
2. Breeder seed of GR915 consists of the progeny of 4 different F_7 plants bulked after harvest in the F_{11} generation in 1990. Foundation generation seed was produced in 1990-91 and distributed to contract growers in late summer, 1991.
3. GR915 appears to be extremely uniform and homozygous as observed in the field in 1990, 1991, and 1992. This uniformity is expected utilizing our purification and increase system where individual heads are selected and increased in a "pedigree" system beginning in the F_7 generation.
4. GR915 appears to be true breeding and very stable in phenotype as evidenced by various agronomic and pathological examinations conducted on the F_7 - F_{12} generations.
5. Variants appear to be few in number and of various, non-recurring types, typical of breeding programs involving self-pollinated crops.
6. This cultivar was selected for its high yielding ability, excellent straw strength and overall performance.

Exhibit B

Novelty Statement and Botanical Description of the Variety

GR915 is an awnless, white-chaffed cultivar possessing apical awnlets only. GR915 appears most similar to Becker during late jointing to maturity, possessing similar foliage color (dark green), head color (medium green), head appearance and head and flag leaf carriage (very erect during green phase). Apical awnlets of GR915 are typically longer than those of Becker. GR915 is a very short cultivar, averaging about 2.5 cm shorter than Becker, one of the shortest soft red winter varieties in production. Heads of GR915 tend to be more slender than those of Becker. GR915 can easily be distinguished from Becker as it has exhibited excellent resistance to powdery mildew (*Erysiphe graminis* f. sp. *tritici*) in tests over a 6-year period while Becker is very susceptible to powdery mildew in Ohio tests.

GR915 is a midseason maturity cultivar averaging the same maturity as Cardinal and Becker in 18 tests in 1987-89. The cultivar has exhibited very good straw strength in Ohio tests averaging only a couple of percentage points higher in lodging than Becker and Excel in these same 18 tests. Winterhardiness of GR915 is excellent, equaling that of the best currently grown cultivars in Ohio tests.

The USDA Soft Wheat Quality Laboratory, Wooster, OH, in evaluations of samples of GR915 over a six-year period found GR915 to possess slightly above average milling quality and slightly below average baking quality.

Test weight of GR915 appears near average, equalling or exceeding Becker and Excel in these same 18 tests. GR915 also exceeded the test weight of Caldwell in 4 regional tests over a two-year period while averaging 1 lb/bu below Caldwell in these 18 tests.

Disease resistance of GR915 is very good, averaging 1% powdery mildew in 15 tests conducted over 6 years. In 5 tests conducted over 4 years it averaged a 1VR (1% of flag leaf area infected with very small pustules) reaction to leaf rust (*Puccinia recondita* f. sp. *tritici*). USDA Cereal Rust Laboratory tests for reaction to leaf rust indicated unknown gene(s) for resistance while tests for resistance to stem rust (*Puccinia graminis* f. sp. *tritici*) indicated the presence of Sr5, possible segregation for Srl7 and possible presence of Sr36. GR915 possesses only moderate resistance to WSSM (wheat spindle streak mosaic virus). GR915 possesses resistance to races GP, A, C, E, and F of Hessian fly (*Mayetola destructor*, Say) imparted by the H₃ gene.

GR915 possesses good to excellent tolerance to acid soils containing high amounts of soluble aluminum, being very similar to Cardinal in this regard.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
COMMODITIES SCIENTIFIC SUPPORT DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT: The Ohio State University, Ohio Agricultural Research and Development Center ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code) 1680 Madison Avenue Wooster, OH 44691	FOR OFFICIAL USE ONLY PVPO NUMBER 9200254 VARIETY NAME OR TEMPORARY DESIGNATION GR915
--	---

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g., 089 or 09) when number is either 99 or less or 9 or less.

1. KIND:

1 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

2 1 = SPRING 2 = WINTER 3 = OTHER (Specify) 1 1 = SOFT 2 = HARD 3 = OTHER (Specify)

2 1 = WHITE 2 = RED 3 = OTHER (Specify)

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

228 FIRST FLOWERING 234 LAST FLOWERING

4. MATURITY (50% Flowering):

NO. OF DAYS EARLIER THAN 1 = ARTHUR 2 = SCOUT 3 = CHRIS
5 NO. OF DAYS LATER THAN 1 4 = LEMHI 5 = NUGAINE 6 = LEEDS

5. PLANT HEIGHT (From soil level to top of head):

79 CM. HIGH
 CM. TALLER THAN
15 CM. SHORTER THAN 1 1 = ARTHUR 2 = SCOUT 3 = CHRIS
4 = LEMHI 5 = NUGAINE 6 = LEEDS

6. PLANT COLOR AT BOOTING (See reverse):

2 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHOR COLOR:

1 1 = YELLOW 2 = PURPLE

8. STEM:

1 Anthocyanin: 1 = ABSENT 2 = PRESENT 2 Waxy bloom: 1 = ABSENT 2 = PRESENT
2 Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT 1 Internodes: 1 = HOLLOW 2 = SOLID
4 NO. OF NODES (Originating from node above ground) 20 CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

1 Anthocyanin: 1 = ABSENT 2 = PRESENT 2 Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

1 Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 2 Flag leaf: 1 = NOT TWISTED 2 = TWISTED
3 = OTHER (Specify): 2 Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
1 Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT
12 MM. LEAF WIDTH (First leaf below flag leaf) 23 CM. LEAF LENGTH (First leaf below flag leaf):

11. HEAD:

☐ 2 Density: 1 = LAX 2 = DENSE ☐ 1 Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE
 4 = OTHER (Specify) _____
☐ 2 Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED
☐ 2 Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED
 5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____
☐ 9. 0 CM. LENGTH ☐ 1 ☐ 2 MM. WIDTH

12. GLUMES AT MATURITY:

☐ 2 Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.) ☐ 3 Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.)
 3 = WIDE (CA. 4 mm.)
☐ 2-4 Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE ☐ 1 Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

☐ 1 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

☐ 1 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

☐ 1 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

☐ 1 Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL ☐ 1 Check: 1 = ROUNDED 2 = ANGULAR
☐ 2 Brush: 1 = SHORT 2 = MEDIUM 3 = LONG ☐ 1 Brush: 1 = NOT COLLARED 2 = COLLARED
☐ NA Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK
☐ 3 Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____
☐ 6. 1 MM. LENGTH ☐ 3. 5 MM. WIDTH ☐ 3. 8 GM. PER 1000 SEEDS

17. SEED CREASE:

☐ 1 Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'
☐ 1 Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☐ STEM RUST See (Races) attached ☐ LEAF RUST See (Races) attached ☐ 0 STRIPE RUST (Races) ☐ 0 LOOSE SMUT
☐ 2 POWDERY MILDEW ☐ 0 BUNT ☐ OTHER (Specify) _____

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☐ 0 SAWFLY ☐ 0 APHID (Bydv.) ☐ 0 GREEN BUG ☐ 0 CEREAL LEAF BEETLE
☐ OTHER (Specify) _____ HESSIAN FLY RACES: ☐ 0 GP ☐ 2 A ☐ 1 B ☐ 2 C
☐ 1 D ☐ 1 E ☐ 2 F ☐ 0 G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Becker	Seed size	Cardinal
Leaf size	Roland	Seed shape	Toropi
Leaf color	Becker	Coleoptile elongation	Becker
Leaf carriage	Becker	Seedling pigmentation	Roland

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L. W. Briggie and L. P. Reitz, 1966, *Classification of Triticum Species and Wheat Varieties Grown in the United States*, Technical Bulletin 1278, United States Department of Agriculture.

(b) W. E. Walls, 1965, *A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity*, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

Exhibit D

Additional Description of the Cultivar

Plant color at booting of GR915 is best described as green (Item 6, Exhibit C), however, it is a dark green, but not a blue green.

Auricles of GR915 are best described as absent of anthocyanin (Item 9, Exhibit C), however, occasionally ends of rows exposed to sunlight exhibit some anthocyanin in auricles.

Heads of GR915 are best described as dense (Item 11, Exhibit C), however, they are only moderately dense compared to many cultivars described as dense.

GR915 is apically awnleted with tip awns often measuring 25-30 mm in length.

Table 1. Comparing yields of OH 394 and OH 413 with currently grown cultivars in drilled plot trials, by years, Ohio.

Cultivar or Line	1985 1 test	1986 1 test	1986 3 tests	1987 3 tests	1987 6 tests	1988 6 tests	1989 6 tests	1990 4 tests	1990 6 tests	OH 394 Summary		OH 413 Summary		OH 394 vs OH 413 Avg.
										Avg.	22 tests	Avg.	18 tests	Avg.
OH 394	80.9	--	63.9	--	64.2	69.6	62.5	71.6	--	66.6	65.5	--	--	66.1
OH 413	--	70.2	--	76.0	--	69.6	64.9	--	74.7	--	--	69.7	70.2	67.3
Becker	--	49.1	52.6	64.8	64.6	67.4	57.4	60.9	67.4	62.7	63.1	64.1	63.2	62.4
Caldwell	69.8	49.5	48.1	62.4	60.1	67.9	54.2	--	--	--	60.7	--	61.5	61.1
Cardinal	--	--	--	68.5	64.5	60.3	60.4	67.5	72.1	63.5	61.7	64.3	63.1	60.4
Dynasty	--	--	--	--	65.2	71.5	66.5	62.3	69.4	66.7	67.7	69.1	--	69.0
Excel	--	--	--	--	63.3	71.3	65.5	64.1*	70.1	66.2	66.7	69.0	--	68.4
5% L.S.D.	5.0	4.5	5.0- 6.6	5.7- 6.9	3.3- 6.8	3.0- N.S.	4.3- 6.7	3.8- 7.0	3.7- 5.2					

* Calculated on basis of relative performance in other nurseries.

Table 2. Comparative performance of OH 394 and OH 413 and currently grown cultivars in drilled plot trials, Ohio (average of 18 tests, 1987-89 for OH 394 and 18 tests, 1988-90 for OH 413).

Cultivar or Line	Winter Survival (%)	Pl. Ht. (in.)	Date Headed (May)	Lodging (%)	Test wt. (lb/bu)
	(OH 344) (OH 413)	(OH 394) (OH 413)	(OH 394) (OH 413)	(OH 394) (OH 413)	(OH 394) (OH 413)
OH 394	95	-- 31	-- 27	7	55.6 --
OH 413	-- 96	-- 36	-- 25	-- 8	-- 54.9
Becker	95	96 32	27 26	4 3	55.6 55.9
Caldwell	94	-- 35	-- 24	21	56.6 --
Cardinal	90	91 36	27 27	11 7	56.0 56.2
Dynasty	95	96 37	25 25	13 8	57.5 57.7
Excel	95	96 35	26 26	5 2	55.2 55.5

(OH 413 = OH 394 in hardiness)
(OH 413 = Approx 3" taller than OH 394)
(OH 413 = 1 day earlier than OH 394)
(OH 413 = ~4% more lodging than OH 394)
(OH 413 = .9 lb/bu lower T.W. than OH 394)

Table 3. Comparative performance of OH 394 and OH 413 and currently grown cultivars in miscellaneous Ohio tests.

Cultivar or Line	H.F. Res. (Races)	% Mildew ¹ (OH 394) (OH 413) 15 tests 12 tests 6 yrs 5 years		WSSM ² 4 tests 1 yr		Leaf Rust (OH 394) (OH 413) 5 tests 4 tests 4 yrs 4 yrs		Yield ³ 1 yr 5 yrs		Quality - 6 yrs. Milling Baking	
								Al Tol Score ⁴ 5 yrs			
OH 394	A,C,F	1	--	3		1VR	---	88	4.8	B	D
OH 413	A,C,F	--	0	2		---	0	---	4.8	C-	D
Becker	A,C,F	82	82	1		7MR	3MR	100	4.0	C	B-
Caldwell	A,B,E	29	29	4		OVR	OVR	100	6.3	--	--
Cardinal	A,C,F	33	33	2		(1R)	(1VR)	100	4.8	A	B
Dynasty	None	(13)	(13)	1		(5VR)	(2VR)	43	6.5	B-	D
Excel	A,B,C,E,F	(13)	(13)	1		(5VR)	(4VR)	97	7.2	B-	C-

¹ Years or locations with no mildew present omitted from calculations.

² 0 = none to 9 = severe.

³ Yield as % of Seneca.

⁴ 0 = very tolerant, 9 = sensitive.

Table 4. Summary of Regional Nursery data involving OH 394 and OH 413.

	Yield (bu/a)				Avg. Date Headed (May)	Avg. Ht. (in.)	Avg. Lodging (%)	Avg. Survival (%)	Avg. Mildew (%)	H.F. Races E B L	Test Wt. (lb/bu)
	1990		1989								
	OARDC	N.W.	OARDC	N.W.							
Cardinal	74.1	73.4	52.0	53.5	63.3	28	39	20	90	32	R-S-S 53.2
Excel	71.8	70.6	51.5	64.9	64.7	27	36	17	92	16	R-R-S 52.2
OH 394	80.7	81.0	49.9	52.8	66.1	28	35	21	91	0	R-S-S 51.9
OH 413	75.2	75.9	53.7	69.9	68.7	27	37	11	89	0	R-S-S 52.2
Caldwell	67.6	61.5	38.6	50.2	54.5	26	36	25	89	21	R-R-S 52.7
5% LSD	5.6	6.0	9.4*	11.4*							

* Note extremely high LSD values in 1989.

Table 5

9200254

Seedling reaction of entries of the 1990 Uniform Eastern Soft Red Winter Wheat Performance Nursery to selected isolates of *Puccinia graminis* f. sp. *tritici*. (by D.V. McVey, USDA-ARS, Cereal Rust Laboratory, U. of MN., St. Paul, MN.)

		Reaction Produced by Isolates								
		68-	72-	69-	72-	72-	72-	74-		
		41-	00-	21-	25-	00-	4-	21-		
		73A	1370C	399	639C	53A	1A	1409A		
Name or		HNLO	QFBS	OSHS	RKOS	RTOO	TNMH	TNMK	Spec.	
No.	Sel. No.	17A	151		11-32		15B-2		Sr Gene	
1	Knox 62	S	S	S	S	S	S	S	NONE	
2	Cardinal	S	S	S	S	S	S	S	NONE	
3	Caldwell	0	2=	S	S	0	0	2=	9a, 17	
4	OH 286	0	2=	2=	S	0;	0	S	7b, 17	
5	AR 26415	2=	2=	S	21N	2-	2	2-	+	
6	OH 394	0	S	0, S	S	S	S, 0;	S	5, seg 17, 36?	
7	KY 83-38	S	S	S	S	S	S	S	NONE	
8	MO 10501	2=	2=	S	S	S	2=	2-	9a	
9	ABI 85-81	0	1N	0	; 1CN	0	;	; 1CN	6, 17, 36	
10	MO 11769	S	S	S	S	S	S	S	NONE	
11	MO 11785	0	;	S	; , S	0	0	2	10, 17, +	
12	OH 413	0	0;	0	0	0	0	0	+	
13	VA 85-52-24	0	0	0	0	0	0	0	+	
14	VA 85-52-34	; 1N	; 1N	S	; 1N	1N	; 1-N	; 1CN	10, 15, 17	
15	IL 84-3010	S, ; 1-N	S	S	S	S	S, ;	S	seg 17	
16	IL 84-3511	; 1=N	23CN	S	S	S	; 1N, S	S-	seg 17	
17	PA 8457-1	2=	2=	S	S	S	2-	2-	5, 9a	
18	WI X1625-1-1	2-	2=	2	S	S	S	S	+	
19	MD 75266-46	0, S	S	S	S	S	S	S	seg 5	
20	C 86-33	0	0	0	0	0	0	0	+	
21	CL 860426	0	1	0	; 1	0	0	0	+	
22	MD Blend	S	S	S	S	S	S	S	NONE	
23	Susquehanna	0, S	S	S	S	S	S	S	seg 5	
24	T 84-774	0	S, ;	S	S	S	;	S	+	
25	T 84-331	0	0	23	; 1CN	0, S	0	0	6, 10	
26	79410D1-3-3-5-2-1	0	S	0	S	0	0	2=	17, 36, +	
27	8138I1-16-5-50	0	S	S	S	0	0	S	5, 17	
28	7942H1-20-8	0	S	S	S	0; , S	; , S	S	5, seg 17	
29	ABI 86-91	0	2-1N	S	0	; 1-N	S	S	5, 10	
30	ABI 86-55	0	0	S	0	; 1-N	S	S	5, 10	
31	PSR-W71	0	S	S	S	0	0	S	17	
32	PSR-W84	0	S	S	S	0	0	S	17	
33	PSR-W89	0	S	S	S	0	0	S	17	
34	IL 84-4046	2	2	S	S	S	2-	2-	9b	
35	WI X1625-1-3	2	2-	2=	2	2-	S	S	+	
36	WI X1923-1	0	2	23	S	S	2-	2	5, 9a	
37	VS 30409	0	S	S	S	0	0	S	17	
38	VS 30557	S	S	S	S	S	S	S	NONE	
39	C 86-24	; 1-	-	S	S	-	; 1-CN	2-CN	+	
40	LB 63	0	2=	2-	2=	0	0	2=	17, 24	
41	AR 84-31-5	0	S	S	S	0	0	S	17	

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Table 6

9200254

Seedling reaction of entries of the 1989-90 Uniform Eastern Soft Red Winter Wheat Performance nursery to selected races of *Puccinia recondita* f. sp. *tritici* (by David Long, USDA, ARS, Cereal Rust Lab. Univ. of MN, St. Paul, MN).

Reactions produced by NA race

Cultivar # or line	TLGG ¹	MBGL	TBGL	CBGL	CBGB	DBBB	LBBQ	MFBL	MDBL	PBRG	PLML	Postulated Lr genes					
1 Knox 62	3	3	3	3	3	3	3	3	3	3	3	0					
2 Cardinal	;	3	1c2	1c;	;	;	1c	3	;	1c-3	3;-1c	3	21c	+			
3 Caldwell	3;	3	3	3	3	;	1c	3	3	3	1c;	1c2	+				
4 OH 286	3	3	3	3	3	;	1c	3	3	3	3	3	+				
5 AR 26415	3	3	3	3	3	;	;	2	;	1	;	1	3	1c1	11		
6 OH 394	;	;	1c	;	1c	;	;	1	;	;	;	1c	3	3	+		
7 KY 83-38	3;1c	3	3	3	3;	3;	3	3	3	3	3	3	3	3	+		
8 MO 10501	3	3	3	;	;	;	1	;	3	3	3	3	3	3	1		
9 ABI 85-81	;	1c;	;	1c1	;	;	;	;	1c2	;	1c	21	1c;2	1c;2	-- ²		
10 MO 11769	3	3	3	;	1c	;	1c	;	1c	;	1c1	;	1c1	3	21;	1,11	
11 MO 11785	3-1c2	3-;	;	1c-3	3;	3-;	3;	3;	3	3-1c;	1c3;	31c	31c	31c	+		
12 OH 413	;	;	;	;	;	;	;	1c	3;	;	;	;	;	;	+		
13 VA 85-52-24	;	3;	3;	3;	;	;	;	;	;	;	;	;	1	;	10,11		
14 VA 85-52-34	;	3	3	3	;	;	;	3	3	3	3	3	3	3	10		
15 IL 84-3010	3	3	3	;	;	-3	;	-3	3	3	3	3	3	3	+		
16 IL 84-3511	3	3	3	;	;	3	;	-3	3	3	3	3	3	3-;	+		
17 PA 8457-1	3	;	;	;	;	;	;	;	;	;	;	;	3	3	9		
18 WI X1625-1-1	3;	3	3	3	3	;	;	;	3	3	3	3	3	3	3		
19 MD 75266-46	3	3	3	3	3	3	3	3	3	3	3	3	3	3	0		
20 C 86-33	;	;	;	;	c	c	c	;	;	;	1c	;	;	;	--		
21 CL 860426	3	3	3;	;	1c	;	1c2	;	;	;	;	3	;	;	1,3,11		
22 MD Blend	;-3	3-;	-	3-;	;	;	c	;	;	;	3	3	3	3	+		
23 Susquehanna	;	3-;	3	3;	;	;	;	;	3-;	3-3;	3-3;	3	3	3	+		
24 T 84-774	;	;	1c	;	1c1	;	1c	;	1c	;	1c	;	2c	3	3	+	
25 T 84-331	3	;	3	;	;	;	;	;	;	;	;	;	;	;	2a,11		
26 79410D1-3-3-5	;-2	3	3	3	;	3	;	11c;	2	1+	;	;	;	;	+		
27 813811-16-5-50	;	1c3	3	31c	;	1c	;	1c	;	1c2	;	3;	1c;-3	;	1c	1c;	+
28 79424H1-20-8	;	1c-3	3;	;	;	1c	;	3	;	1c	;	1c	;	2;	1c;-3	3-;	+
29 ABI 86-91	3	3	-	3	3	;	;	1c	;	1c	;	3;	;	1c	;	11	
30 ABI 86-55	3;	3	3	3	3	3-;	;	-3	;	3;	3	3	;	1c-3	;	+	
31 PSR-W71	3-;1c	3	3	;	;	;	;	3	;	-3	3	3	3	3	3	1	
32 PSR-W84	;	1c	3	3	1c;	31c;	;	1c	;	;	;	;	;	;	;	+	
33 PSR-W89	3	3	3	1c;	;	;	;	2	;	;	;	3	;	;	;	1,11	
34 IL 84-4046	3	;	3	;	;	;	;	;	;	;	;	1	;	;	-3	1,2a	
35 WI X1625-1-3	1c2	3	3	3;	3;	;	;	-	3;	3	3	3	3	3	3	+	
36 WI X1923-1	3	3	3	3	3	;	;	;	3	3	3	3	3	3	3	3	
37 VS 30409	3	3	3-;	3	3	;	1c	1+	3	3	3	3	3	3	3	+	
38 VS 30557	;	1c3	3	3	3	3;	31c	3;	3	3	3	2;-3	3;	3;	3;	+	
39 C 86-24	;	-	;	;	;	-	-	-	-	;	;	-	-	-	-	--	
40 LB 63	;	;	;	;	;	;	;	1c2	;	-3	;	;	;	;	;	+	
41 AR 84-31-5	;	;	1c	;	;	;	;	;	;	;	;	;	;	;	;	--	

¹ Single Lr genes tested - 1,2a,2c,3,3ka,9,10,11,16,17,18,24,26,30.

Virulence formula:

TLGG - Lr1,2a,2c,3,9,11,18

MBGL - Lr1,3,10,11

TBGL - Lr1,2a,2c,3,10,11

CBGL - Lr3,10,11

CBGB - Lr3,11

DBBB - Lr2c

LBBQ - Lr1,10,18

MFBL - Lr1,3,10,24,26

MDBL - Lr1,3,10,24

PBRG - Lr1,2c,3,3ka,11,18,30

PLML - Lr1,2c,3,3ka,9,10,30

² Broadly resistant in relation to test races.

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Uniform Eastern Regional Nursery Performance

- 1989 - OH 394 ranked 21st in yield among 38 experimental entries and checks at 33 locations. It ranked somewhat better in tests in Illinois, Kentucky, Ohio, Michigan and some areas of Indiana and somewhat worse in areas more distant to Ohio (Nebraska, NY, Missouri). Cardinal ranked 16th in this nursery over all.
- 1990 - OH 394 ranked 6th in yield among 41 experimental entries and check varieties at 32 locations, averaging 57.8 bu/a compared to an average yield of 51.1 for Excel, 51.7 for Caldwell, and 58.8 for Cardinal. Its lowest rankings were in Texas, Kansas, Wisconsin, and it performed somewhat variably in some of the many tests conducted in west central Indiana. It ranked near the top at all other locations.

OH 394 Soft Red Winter Wheat

Pedigree: 23179-4

Parentage: OH 111/Toropi//Roland (OH 111 = S410/Logan;
S410 is HRS from India, Toropi is A1 tolerant, Brazilian
spring)

History: Final cross made in 1979. First selected as an F₃ plant in
1982. Fifty heads were reselected in F₇ in 1986 and progeny
rows were examined for uniformity and/or yield through 1990.
Breeder seed consists of progeny of 4 different F₇ plants
bulked after harvest in the F₁₁ generation in 1990.

Description: Beardless, white chaffed, extremely uniform in appearance.
Has appealing field appearance from heading to maturity. Is
very short, averaging one inch shorter than Becker in field
tests to date. Maturity (heading date) similar to Becker and
Cardinal. No unusual morphological features of note.

Performance: Based on the performance of OH 394 in various tests in Ohio
and surrounding areas this variety appears to be equal in
yield potential to the most recent Ohio releases Dynasty and
Excel and is superior to Cardinal, Becker, and Caldwell. OH
394 and GR 876 overlapped in only one year in the state-wide
drilled plot yield trials, that being 1987 when GR 876
averaged 68.1 bu/a in six trials compared to a yield of 64.2
for OH 394; a non-significant difference.

Data from various Ohio drilled plot yield trials are presented
in Tables 1-3. Data is also included in these tables for
OH 413, scheduled for public release concurrently with OH 394.

OH 394 was tested in the Uniform Eastern Nursery in 1989 and
1990 and the results are presented in Table 4. Because of the
rapid advancement of this line through the testing program,
the line was never tested in the Uniform 4-State Nursery;
advancing from preliminary nurseries directly to the Uniform
Eastern Nursery. Such rapid advancement is a strong
indication of the superiority of this line; no variety has
ever progressed through our breeding program from cross to
release as rapidly.

Tables 5 and 6 summarize the seedling reaction of entries in
the 1989-90 Uniform Eastern Soft Red Winter Wheat Performance
Nursery, including OH 394, to stem rust and leaf rust,
respectively, in tests by the USDA Cereal Rust Laboratory.

Exhibit E

Statement of the Basis of Applicant's Ownership

The originating crosses, early line increase and evaluation, selection, reselection, testing purification, and final multiplication were all performed by the applicant breeder (Dr. H. N. Lafever) or his technical assistants on the property of The Ohio State University, Ohio Agricultural Research and Development Center, utilizing funds provided for such research. Ownership of the cultivar shall remain with The Ohio State University, Ohio Agricultural Research and Development Center, however, through The Ohio State University Research Foundation, exclusive rights to produce, promote, and market this cultivar have been granted, by contract, to the Agricultural Genetic Research Association.